SAMSUNG

LCD-Monitor

Chassis LS20BRD

Model 204B

SERVICE Manual

LCD Monitor

Fashion Feature

- Premium HAS application(Lift 80mm)
- Magic Rotation application
  (Auto pivot Delete)
- Embeded Power, Mechanical S/W
  application

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LS20BRD Service Manual

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1 Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

   WARNING : Do not use an isolation transformer during this test.

   Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

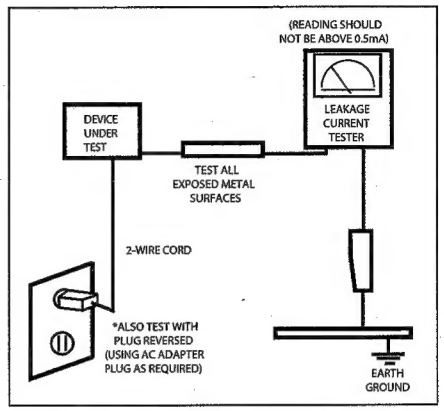


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.

2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.

3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.

4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.

5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.

6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.

7. When installing the product, leave enough space (10cm) between the product and the wall for ventilation purposes.
A rise in temperature within the product may cause fire.

Memo

2 Product Specifications

2-1 Fashion Feature

-. Premium HAS application(Lift 80mm)
-. Magic Rotation application(Auto pivot Delete)
-. Embeded Power, Mechanical S/W application

2-2 Specifications

Item	Description
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally black transmissive, 20-Inch viewable, 0.255 (H) x 0.255 (V) mm pixel pitch
Scanning Frequency	Horizontal : 31 kHz ~ 80 kHz (Automatic) Vertical : 56 Hz ~ 75 Hz (UXGA : 60 Hz)
Display Colors	16.7 Million colors
Maximum Resolution	Horizontal : 1600 Pixels Vertical : 1200 Pixels
Input Signal	Analog / Digital
Input Sync Signal	Seperate H/V sync, Composite H/V, Sync-on-Green, Automatic synchroniza tion whitout external swith of sync type Level : TTL level
Maximum Pixel Clock rate	162 MHz (Analog/Display)
Active Display Horizontal/Vertical	408(H) x 306(W)
AC power voltage & Frequency	AC 100 ~ 240 Volts, 60/50 Hz ± 3 Hz
Power Consumption	50W (Analog/Display)
Dimensions Set (W x D x H) - Normal - Pivot HEAD ONLY(W x D x H) HEIGHT ADJUSTABE RANGE PIVOT ANGLE SWIVEL ANGLE TILT ANGLE Package	 444.0 x 200.0 x 427.6 mm(17.5 x 7.9 x 16.8 inch) 344.0 x 200.0 x 472.6 mm 444.0 x 74.50 x 344.0 mm 80 mm (IN NORMAL STATE ONLY!) 90 degree 0 ~ 350 degree -4 ~ 18 degree 424.0 x 235.0 x 551.0 mm (16.7 x 9.3 x 21.7 inch)
Weight (Set/Package)	7.7 kg / 9.0 kg
Environmental Considerations	Operating Temperature : 50°F ~ 104°F (10°C ~ 40°C) Operating Humidity : 10% ~ 80% Storage temperature : -4°F ~113 °F (-20°C ~ 45°C) Storage Humidity : 5% ~ 90%
- Designs and specifications are subject to change without prior notice.	

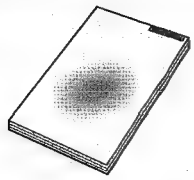
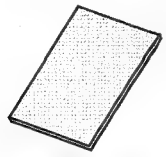
2-3 LS20BRD feature

No	Feature	Feature	Operating method
1	Auto Auto	If 204B turns on in some resolution for the first time, it can execute Auto adjustment automatically for the high Quality	
2	Auto Power on/off	204B can check the change of Source Automatically and change the source to the active Input	
3	Wall mount	204B supports Wall mount(100 X 100)	
4	Gamma & Color temperature Adjust	204B supports 3 step Adjustment for Gamma & Color temperature	
5	Magic Bright	204B supports 6 different brightness mode (Text/Internet/game/sport/Movie/Custom)	
6	Sharpness	Adjust the Sharpness	

2-4 Spec Comparison

Key Specification		
Model	BR20BRBS 204T	LS20BRD 204B
Screen Size	20.1"	20.1"
Brightness	250cd/㎡	300cd/㎡
Contrast	700:1	800:1
Fast Response Time	16ms	5ms
Magic Pivot	O When Monitor is rotated, as Pivot sensor is applied to PBA, Screen is changed automatically	×
Magic Tune	Ver 3.6	Ver 3.6
Sharpness	O	O
Magic Bright	6 steps Text, Internet, Sports, Movie, Game, Custom	6 steps Text, Internet, Sports, Movie, Game, Custom

2-5 Option Specification

Item	Item Name	CODE.NO	Remark
	Quick Setup Guide	BN68-00376L	
	Warranty Card (Not available in all locations)	BH68-00261F	
	User's Guide, Monitor Driver, MagicTune™ software	BN59-00480H	
	D-Sub(15 Pin) Cable	BN39-00244B	
	Power Cord	3903-000085	
	DVI Cable	BN39-00246F	Sold separately

3 Alignments and Adjustments

This section of the service manual explains how to use the RS232 JIG.
This function is needed for AD board change.

3-1 Required Equipment

The following equipment is necessary for adjusting the monitor:

- Computer with Windows 95, Windows 98, Windows NT, Windows 2000, or Windows XP.
- MTI-2031 DDC MANAGER JIG

3-2 Automatic Color Adjustment

To Analog video, In 16gray or any pattern using black and white and any mode.(16gray and XGA mode recommend)

1. Push the OSD Menu button to open the OSD
2. Selectl language English
3. Push enter button during 5 seconds.
4. See the screen flashing

3-3 DDC EDID Data Input

1. Input DDC EDID data when replacing AD PCB.
2. Receive/Download the proper DDC file for the model from HQ quality control department.
   Install the below jig (Figure 1) and enter the data.

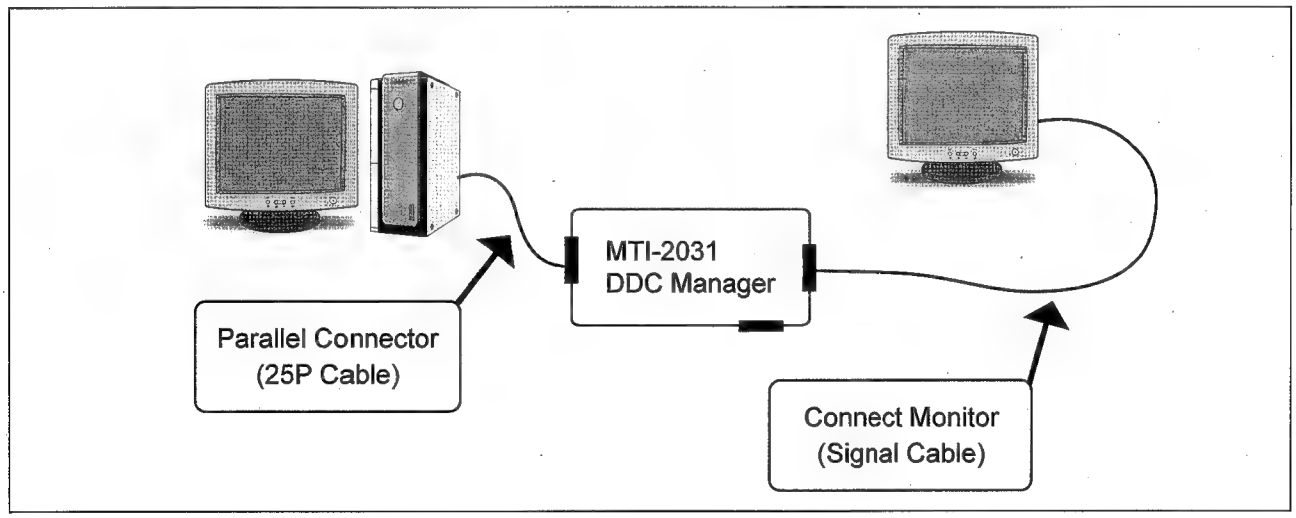


Figure 1.

3-4 Service Function Spec.

3-4-1 How to Display Service Function OSD

1. After setting both brightness and contrast to '0' push the 'enter' button more than 5 seconds.
2. service function appear as below.

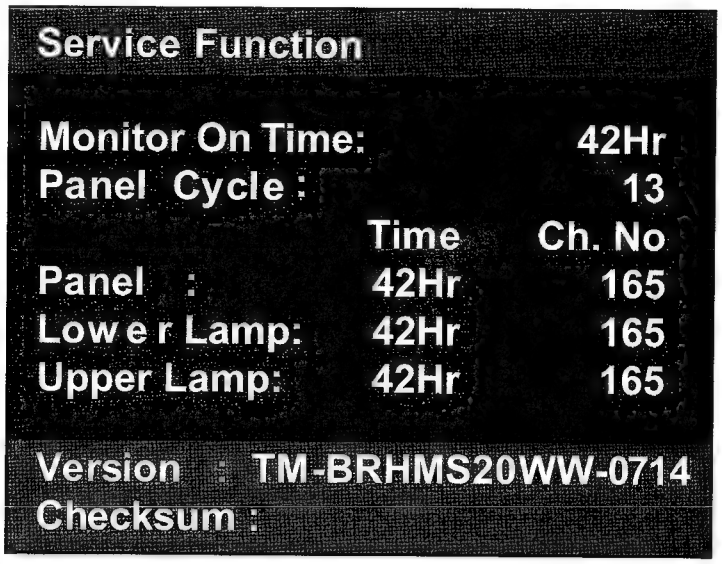


Figure 2.

3-4-2 How to Control Service Function OSD

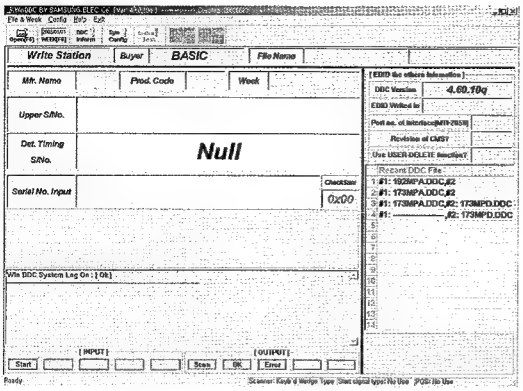
1. Monitor On Time : Power on time
2. Panel Cycle : Panel on/off time(Power off, mode change, DPMS on/off..)
3. Panel : Panel on time
   (Each time the panel is replaced press the menu key for 5 seconds to add to the Ch. No. indicating the number of time the panel has been changed.)
4. Upper lamp : Upper lamp on time
   (When the upper lamp is replaced press menu to add to the Ch. No. which shows the number of times the lamp has been replaced.)
5. Lower lamp : lower lamp on time
   (When the upper lamp is replaced press menu to add to the Ch. No. which shows the number of times the lamp has been replaced.)
6. Auto auto : If Auto auto menu set to on, when the mode is changed for the first time, Auto adjust function is performed. Default is on
7. Pixel Shift : Not used
8. Country : OSD language can be changed with this menu to World wide, Korean, China, or Japanese.

You can navigate the menu with "+"key, and adjust with "menu key" pressing 5 seconds(Panel, Upper Lamp, and Lower Lamp memu). You can also control Auto auto, Pixel Shift, and country menu with pressing "-"key.

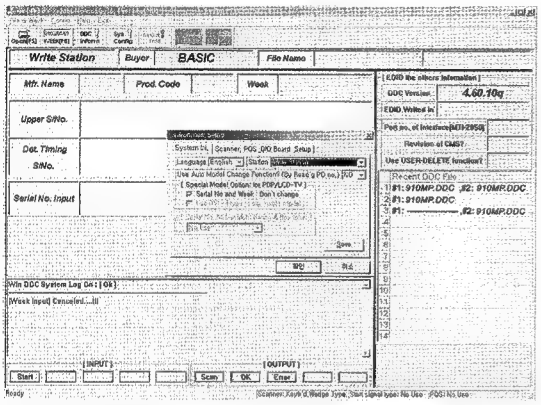
3-5 Hidden Key list

No	Function	Action method
1.	Hidden Service Function	-. After setting brightness and contrast '0' push the "Enter" button more than 5 seconds. -. Service Function appear.
2.	Factory Reset	-. While Menu is opened(any menu), press "enter" key over 5 seconds. -. Screen is flashing, then all menus return to the factory default.
3.	Auto calibration	To Analog video, In 16gray or any pattern using black and white and any mode.(16gray and XGA mode recommend) 1. Push the OSD Menu button to open the OSD. 2. Select language English. 3. Push enter button during 5 seconds. 4. Screen is flashed and auto calibration is completed.
4.	OSD lock	-. Press the menu key over 5 seconds, then OSD is locked . -. To unlocked the OSD, press the memu key over 5 seconds.

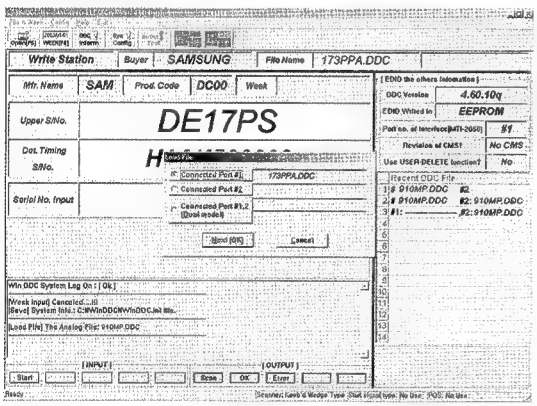
3-6 EDID Installation with Windows Program



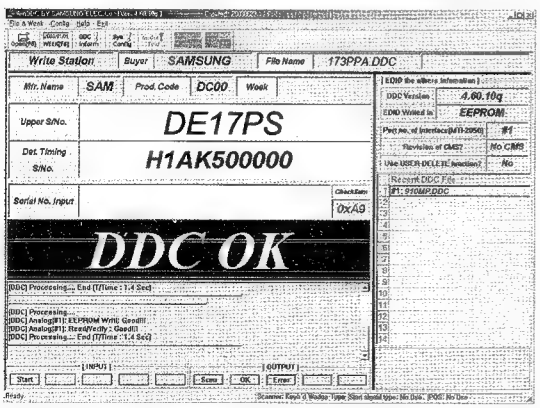
1. Execute "WinDDC.exe"



2. Click "Sys Config"
   Select "Station : Write station"
   Check "Serial No and Week : Don't change"
   Click "Save"



3. Click "Open" icon.
   Select "Connected Port #1" and Next "OK".
   * File Name - 204BA1.DDC : Analog
   204BD1.DDC : Analog
   Press enter key on your keyboard.



4. Confirm the "DDC OK".

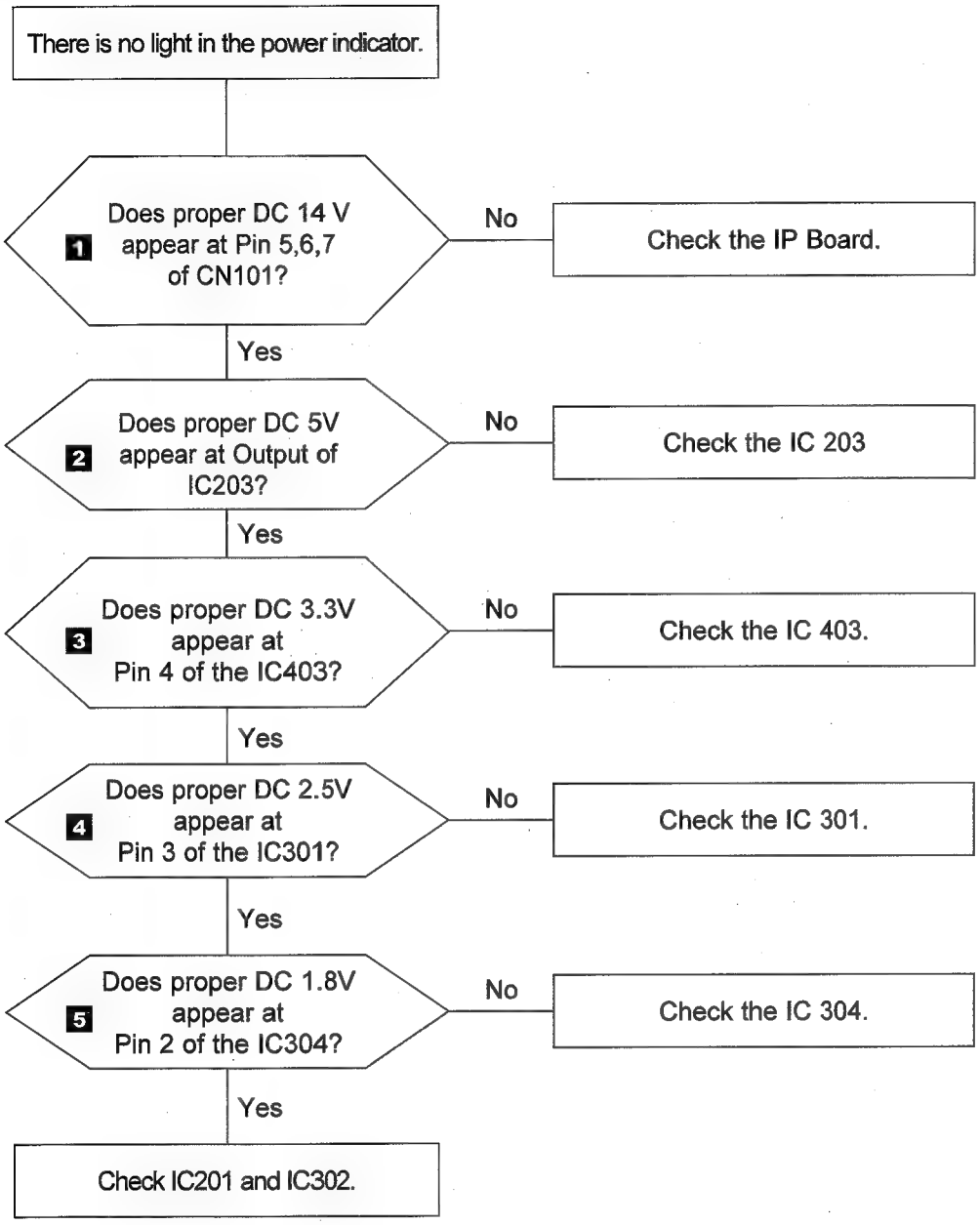
3-7 Execution Items after replacing the main board

After Replacing the Maing Board

1. Auto Calibration
2. EDID installation(Analog and Digital)
3. Factory Reset

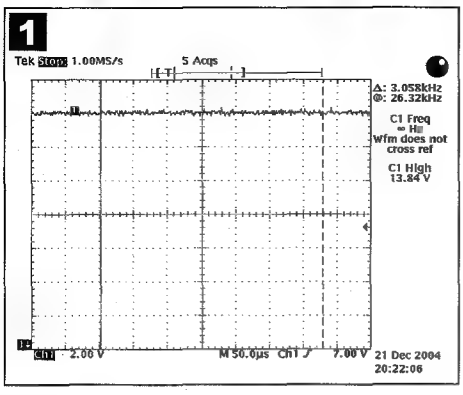
4 Troubleshooting

4-1 No Power



WAVEFORMS

1



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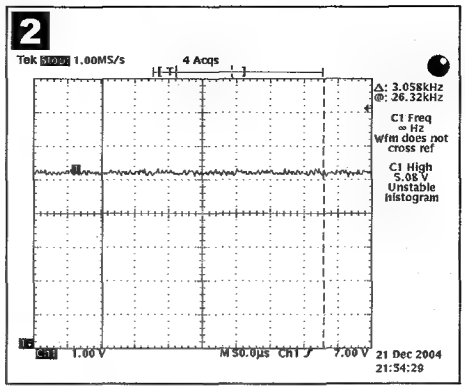

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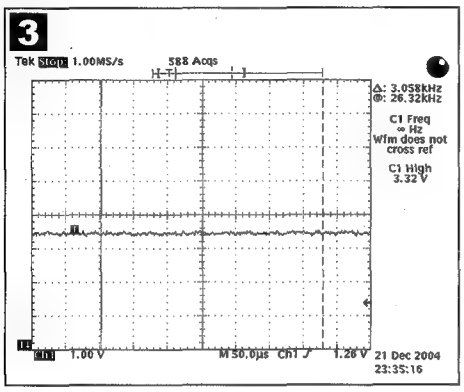

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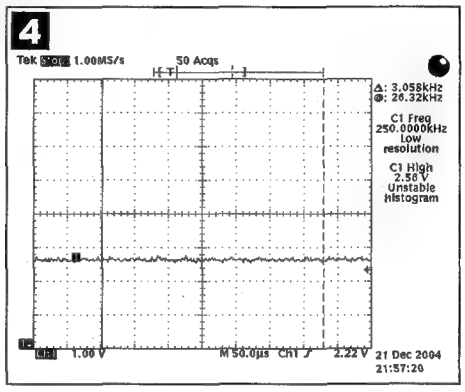

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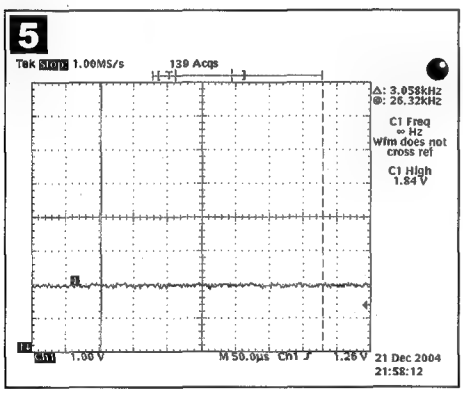
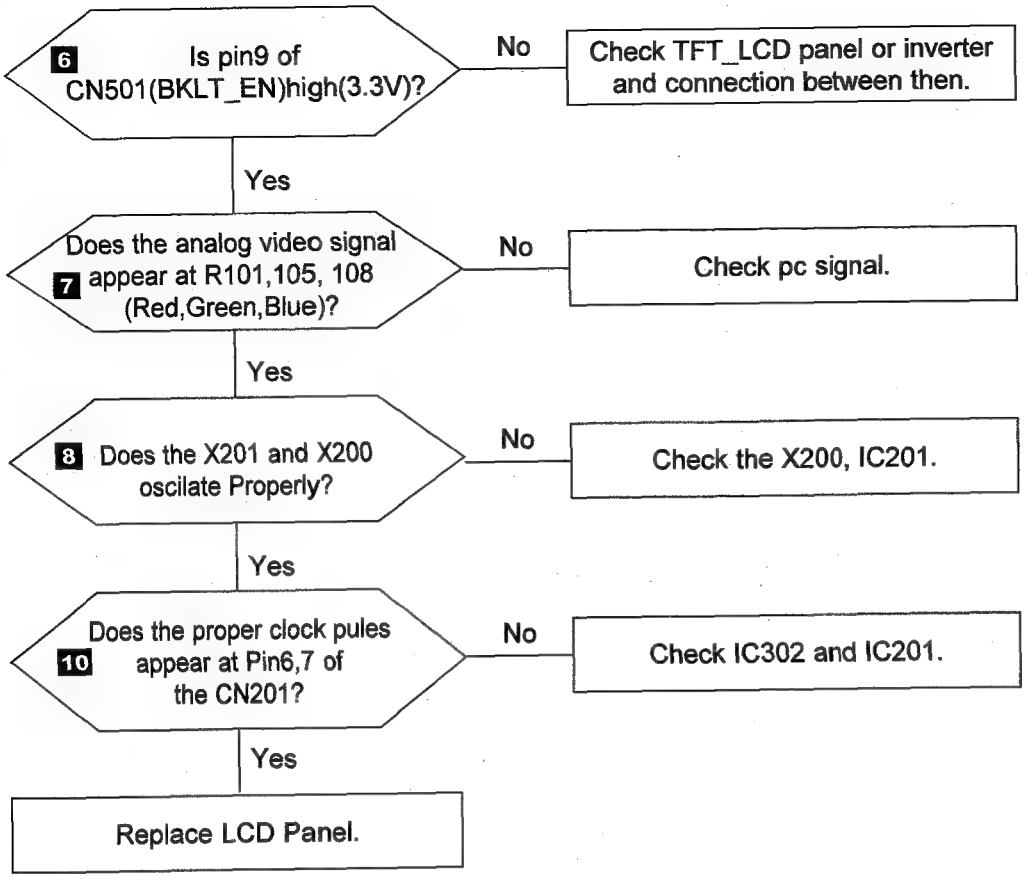


4-2 No Video (PC Analog Signal)



WAVEFORMS

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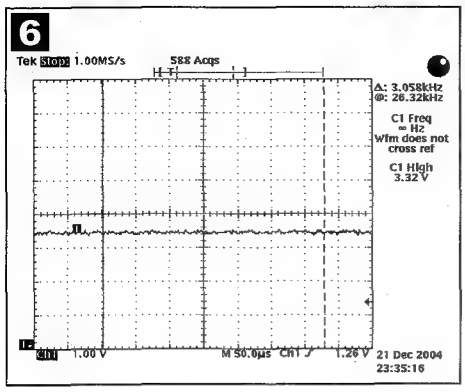

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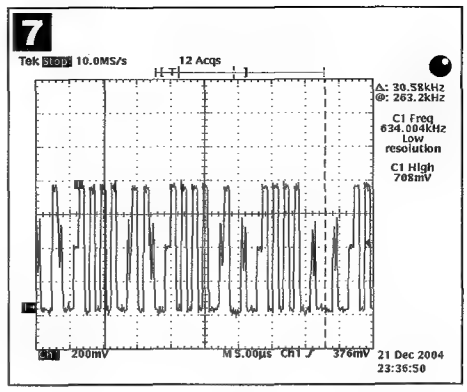

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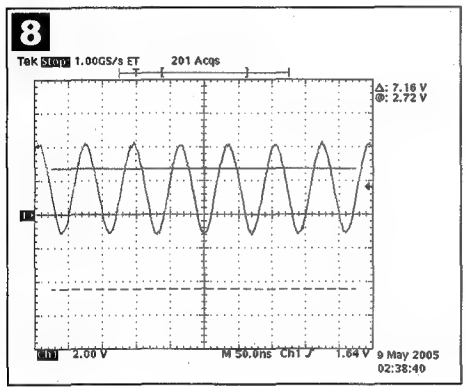

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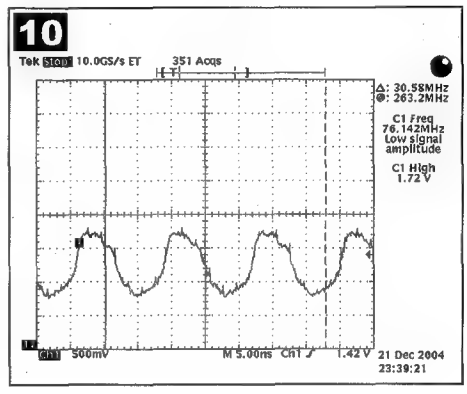
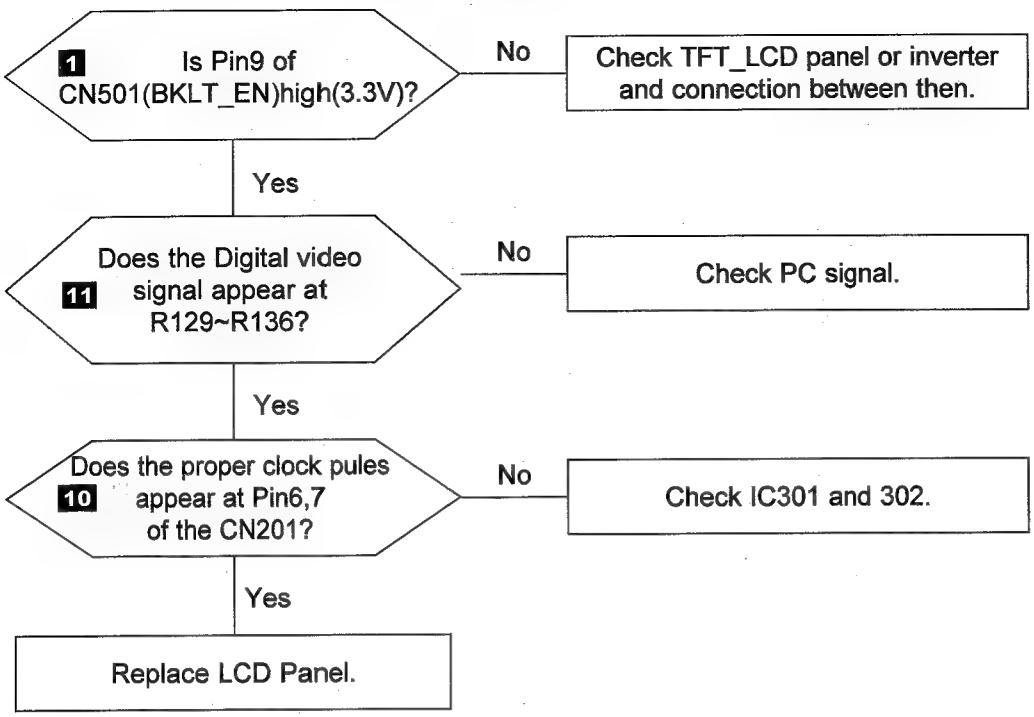
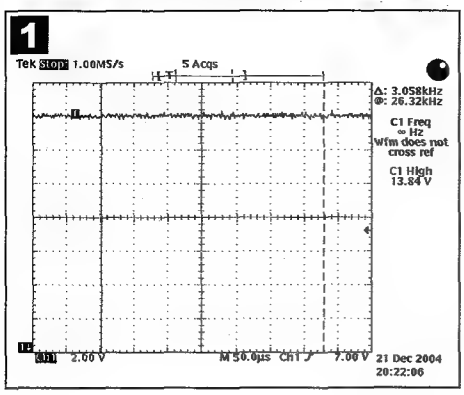
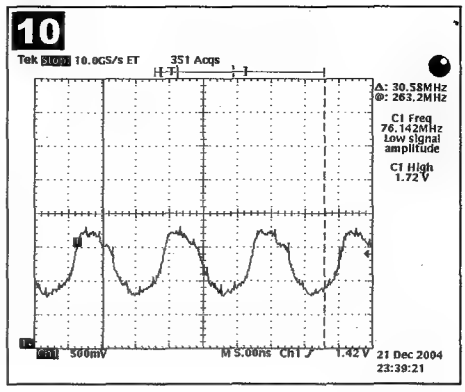


4-3 No Video (PC Digital Signal)



WAVEFORMS


1
Tek Stop: 1.00MS/s
5 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
∞ Hz
Wfm does not cross ref
C1 High
13.84 V
Ch1 2.00 V
M 50.0µs Ch1 ƒ 7.00 V
21 Dec 2004
20:22:06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Tek Stop: 10.0GS/s ET
351 Acqs
Δ: 30.58MHz
@: 263.2MHz
C1 Freq
76.142MHz
Low signal amplitude
C1 High
1.72 V
Ch1 500mV
M 5.00ns Ch1 ƒ 1.42 V
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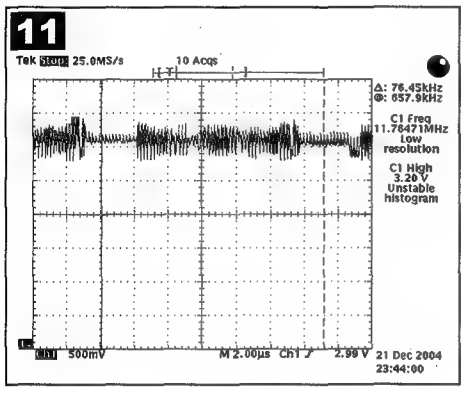
11
Tek Stop: 25.0MS/s
10 Acqs
Δ: 76.45kHz
@: 657.9kHz
C1 Freq
11.76471MHz
Low resolution
C1 High
3.20 V
Unstable histogram
Ch1 500mV
M 2.00µs Ch1 ƒ 2.99 V
21 Dec 2004
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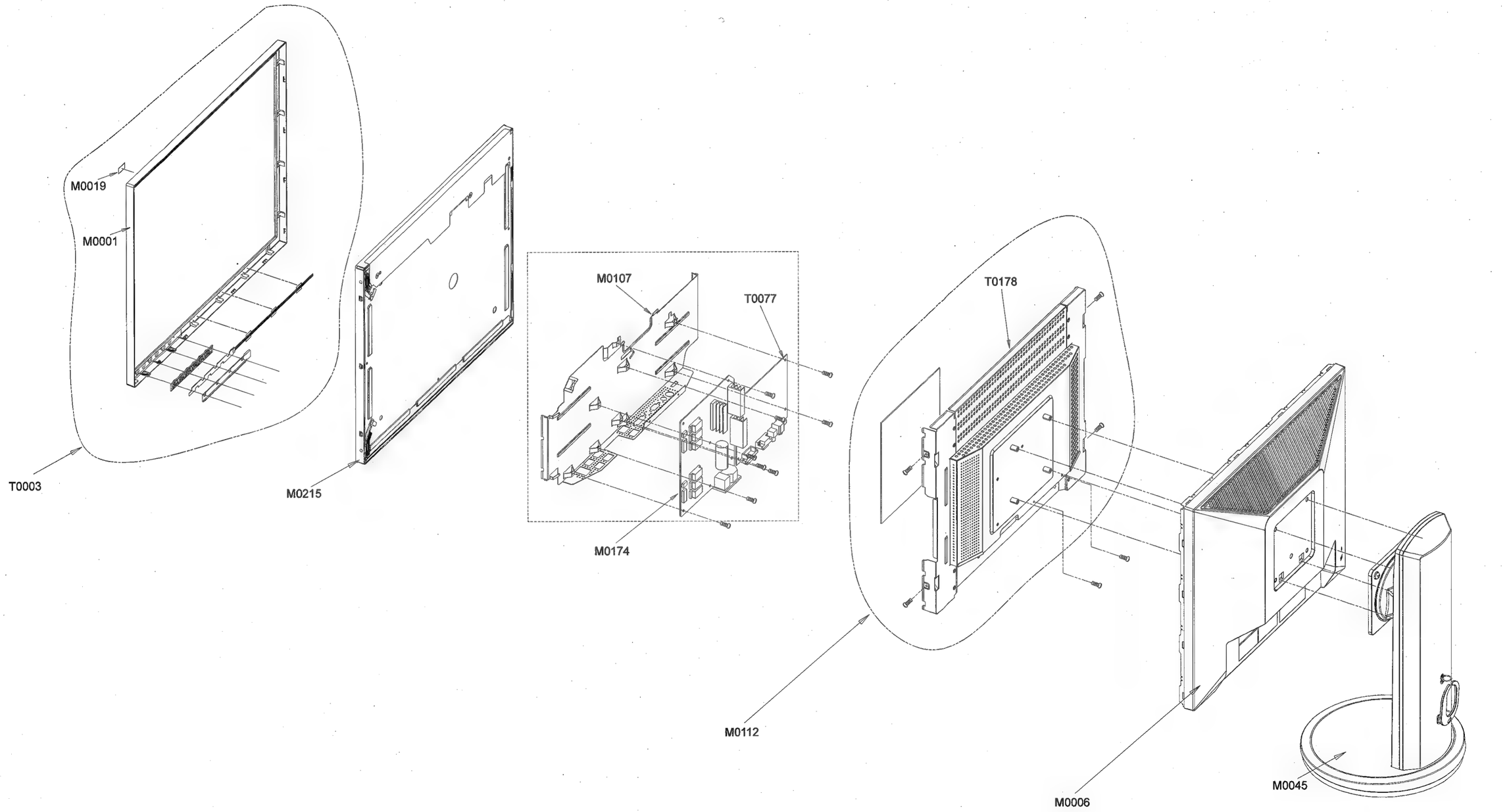
5 Exploded View and Parts List

-You can search for updated part codes through ITSELF web site.
URL : http://itself. sec. samsung.co.kr

5-1 LS20BRD Exploded View



5-2 LS20BRD Parts List

Location.No	CODE-NO	SPECIFICATION & DESCRIPTION	Q'TY	SA/SNA	REMARK
T0003	BN96-02834B	ASSY COVER P-FRONT;LS20BRD,ABS HB,GR70,S	1	SA	
M0019	BN92-01604A	ASSY LABEL;BR20CS*/ADC	1	SNA	
M0001	BN90-00817V	ASSY COVER FRONT;LS20BRDTS/XAA	1	SNA	
M0215	BN07-00249A	LCD-PANEL;LTM201UX-L01,Bramhs,6Bit FRC,4	1	SA	
M0107	BN61-01857A	BRACKET-PCB;BR20BS,SECC,T0.8	1	SNA	
T0077	BN41-00620E	PCB MAIN;204B,FR-4,4L,MP1.0,1.6T,156.5*8	1	SNA	
M0174	BN44-00127C	IP BOARD;IP-45130A,204B,3.0~5.0mA,6.6~8.	1	SA	
M0112	BN96-02173A	ASSY SHIELD P-PCB;BR20BS,SECC	1	SNA	
T0178	BN63-02015A	SHIELD-PCB;BR20BS,SECC,T0.8	1	SNA	
M0006	BN63-02259A	COVER-REAR;LS20BRB,HIPS,T2.2,HB,BK24	1	SA	
M0045	BN96-02791B	ASSY STAND P-SET;LS20BRD,HIPS HB,GR70 (S	1	SA	

6 Electrical Parts List

-You can search for updated part codes through ITSELF web site.
URL : http://itself.sec.samsung.co.kr/

6-1 LS20BRD Parts List

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
		LS20BRDTS/XAA	204B,UXD3/S20B0-LBR,20,LCD-MO,UNITED STA	0	SA
1	M0002	BN90-00781U	ASSY COVER REAR;LS20BRDTS*	1	SNA
2	M0006	BN63-02259A	COVER-REAR;LS20BRB,HIPS,T2.2,HB,BK24	1	SA
1	M0001	BN90-00817V	ASSY COVER FRONT;LS20BRDTS/XAA	1	SNA
2	T0003	BN96-02834B	ASSY COVER P-FRONT;LS20BRD,ABS HB,GR70,S	1	SA
1	M0216	BN90-00818L	ASSY STAND;LS20BRDTS*	1	SNA
2	M0045	BN96-02791B	ASSY STAND P-SET;LS20BRD,HIPS HB,GR70 (S	1	SA
1	M0106	BN91-00939F	ASSY LCD-STZ;BR20DS*	1	SNA
2	M0215	BN07-00249A	LCD-PANEL;LTM201UX-L01,Bramhs,6Bit FRC,4	1	SA
1	M0112	BN91-00950X	ASSY SHIELD;BR20DS*	1	SNA
2	CCM1	6001-000352	SCREW-MACHINE;FH,+,M3,L6,NI PLT,SWRCH18A	4	SNA
2	M0081	6003-000115	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(BLK),SWRC	2	SNA
2	M2893	BN39-00513A	LEAD CONNECTOR;MJ17AS(BS),UL1571#30,UL/C	1	SA
2	M0112	BN96-02173A	ASSY SHIELD P-PCB;BR20BS,SECC	1	SNA
..3		BN63-01774A	SHIELD-INSULATOR;BI17/19BS,PET,T0.35	1	SNA
..3	T0178	BN63-02015A	SHIELD-PCB;BR20BS,SECC,T0.8	1	SNA
1	M0017	BN91-00965H	ASSY CHASSIS-STZ,W/W;BR20DS*,W/W	1	SA
2	M0174	BN44-00127C	IP BOARD;IP-45130A,204B,3.0~5.0mA,6.6~8.	1	SA
2	M0107	BN61-01857A	BRACKET-PCB;BR20BS,SECC,T0.8	1	SNA
2	M0014	BN94-00775D	ASSY PCB MAIN-STZ,W/W;BR20DS*,W/W	1	SNA
..3	T0245	0202-001366	SOLDER-WIRE FLUX;-,RS60S,D1.2,63Sn/37Pb,	0.01	SNA
..3	CN102	3701-001173	CONNECTOR-DVI;24P,3R,FEMALE,ANGLE,AUF	1	SA
..3	CN101	3701-001219	CONNECTOR-DSUB;15P,3R,FEMALE,ANGLE,AUF	1	SA
..3	CN501	3711-004712	HEADER-BOARD TO CABLE;BOX,9P,1R,2mm,STRA	1	SA
..3	M0081	6003-000115	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(BLK),SWRC	7	SNA
..3	M0081	6003-001439	SCREW-TAPTITE;BH,+,S,M4,L8,ZPC(YEL)	1	SNA
..3	IC201_HEAT	BN62-00003A	HEAT SINK-IC;NK,SUN,A6063S,T2.5,W28,L28,	1	SNA
..3	T0174	BN97-00699D	ASSY SMD;BR20DS	1	SNA
...4	CIS5	0202-001375	SOLDER-CREAM;RMA-20-21L,S63,-,Sn63/Pb36.	2.01	SNA
...4	D102	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D103	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D104	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D105	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D106	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D107	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D108	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D109	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D110	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D111	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D112	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D120	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D121	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200MA,SO	1	SA
...4	D401	0402-001098	DIODE-RECTIFIER;SK34,40V,3A,SMC,TP	1	SA
...4	D402	0402-001098	DIODE-RECTIFIER;SK34,40V,3A,SMC,TP	1	SA
...4	ZD101	0403-000258	DIODE-ZENER;BZX84C5V6,5.2-6V,225MW,SOT-2	1	SA
...4	ZD103	0403-000258	DIODE-ZENER;BZX84C5V6,5.2-6V,225MW,SOT-2	1	SA
...4	ZD104	0403-000258	DIODE-ZENER;BZX84C5V6,5.2-6V,225MW,SOT-2	1	SA
...4	ZD107	0403-000258	DIODE-ZENER;BZX84C5V6,5.2-6V,225MW,SOT-2	1	SA
...4	D301	0403-001411	DIODE-ZENER;-,5.49-5.73V,200MW,SOD-323,T	1	SA
...4	ZD105	0403-001435	DIODE-ZENER;QZX363C5V6,5.32-5.88V,200MW,	1	SA
...4	ZD106	0403-001435	DIODE-ZENER;QZX363C5V6,5.32-5.88V,200MW,	1	SA
...4	ZD501	0406-001061	DIODE-TVS;MMQA5V6T3,5.32/5.6/5.88V,24W,S	1	SA
...4	Q101	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA
...4	Q402	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA
...4	Q403	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA
...4	Q601	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA
...4	Q409	0505-001170	FET-SILICON;SI9933ADY-T1,P,-20V,3.4A,0.0	1	SA
...4	IC109	1003-001844	IC-LCD CONTROLLER;MST6281LA-LF-165,LQFP,	1	SA
...4	IC112	1103-000129	IC-EEPROM;24C02,256x8,SOP,8P,5x4mm,4.5/5	1	SA
...4	IC112	1103-001314	IC-EEPROM;24C16,2Kx8,SOP,8P,5x4mm,2.7/5.	1	SA
...4	IC113	1105-001674	IC-DRAM;EM6A9320BI,4Mx32Bit,FBGA,144P,12	1	SA
...4	IC604	1202-000164	IC-VOLTAGE COMP.;393,SOP,8P,150MIL,DUAL,	1	SA
...4	T0087	1203-002351	IC-POSI.FIXED REG.;LF25C,DPAK,3P,240MIL,	1	SA
...4	IC403	1203-002796	IC-DC/DC CONVERTER;AP1501-33K5A,TO-263-5	1	SA
...4	T0087	1203-002844	IC-POSI.FIXED REG.;AP1117D-18A,TO-252-3L	1	SA
...4	T0170	1203-003059	IC-SWITCH VOL. REG.;MP1583,SOIC,8P,4.9x3	1	SA
...4	R214	2007-000040	R-CHIP;150ohm,1%,1/10W,TP,1608	1	SA
...4	R104	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R107	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R109	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
...4	R137	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R138	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R151	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R171	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R173	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R175	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R202	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R231	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R232	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R233	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R234	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R235	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R236	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R309	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R318	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R380	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA
...4	R129	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R130	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R131	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R132	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R133	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R134	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R135	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R136	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R217	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R218	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA
...4	R100	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R110	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R116	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R149	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R150	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R208	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R307	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R308	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R310	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R311	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R312	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R313	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R314	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R343	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R344	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R345	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R346	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R347	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R350	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R351	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R352	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R353	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R354	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R355	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R356	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R358	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R359	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R361	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R362	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R363	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R364	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R365	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R366	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R367	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R372	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R373	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA
...4	R180	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA
...4	R342	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA
...4	R120	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R139	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R215	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R216	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R500	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R501	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA
...4	R810	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA
...4	R811	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA
...4	R317	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA
...4	R371	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA
...4	R125	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R301	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R302	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R303	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R304	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R305	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R306	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R319	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R320	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R321	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R322	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA

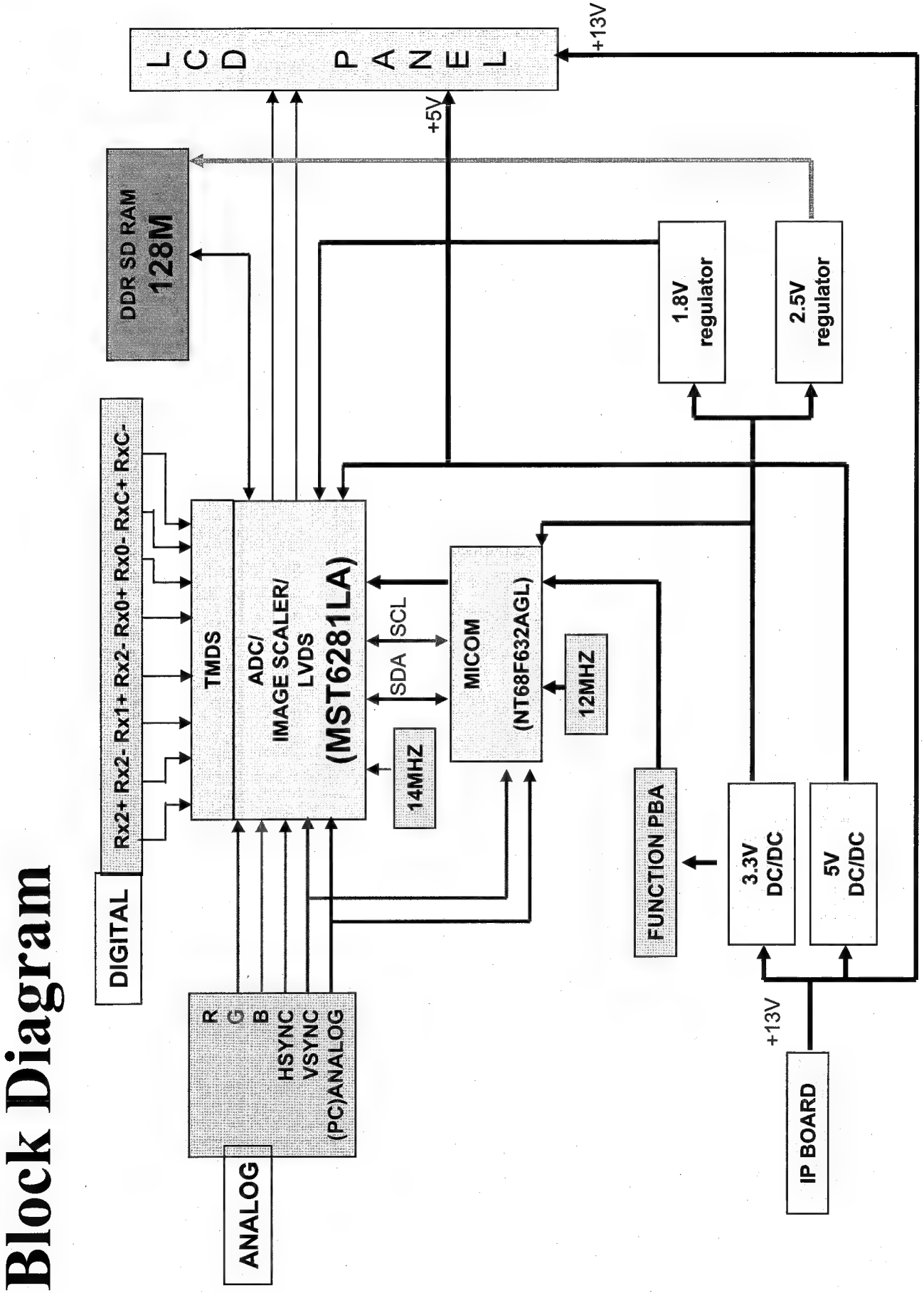
Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
...4	R323	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R326	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R327	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R328	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R329	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R330	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R333	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R334	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R335	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R336	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R337	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R338	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R339	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R340	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R341	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R370	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R374	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R390	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R471	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA
...4	R106	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R153	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R156	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R160	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R206	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R381	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R382	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R383	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R384	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R475	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R476	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R478	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R479	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R603	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R608	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R610	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R612	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA
...4	R102	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA
...4	R103	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA
...4	R477	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA
...4	R480	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA
...4	R219	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R220	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R221	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R222	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R227	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R228	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R229	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R230	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA
...4	R212	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA
...4	R152	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SA
...4	R368	2007-000570	R-CHIP;220OHM,1%,1/10W,TP,1608	1	SA
...4	R369	2007-000570	R-CHIP;220OHM,1%,1/10W,TP,1608	1	SA
...4	R605	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA
...4	R432	2007-000708	R-CHIP;3.9Kohm,1%,1/10W,TP,1608	1	SA
...4	R203	2007-000821	R-CHIP;390ohm,1%,1/10W,TP,1608	1	SA
...4	R433	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA
...4	R140	2007-001002	R-CHIP;510ohm,5%,1/10W,TP,1608	1	SA
...4	R331	2007-001002	R-CHIP;510ohm,5%,1/10W,TP,1608	1	SA
...4	R223	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA
...4	R224	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA
...4	R225	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA
...4	R226	2007-001134	R-CHIP;68ohm,5%,1/10W,TP,1608	1	SA
...4	R121	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
...4	R122	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
...4	R123	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA
...4	R170	2007-002899	R-CHIP;10ohm,1%,1/10W,TP,1608	1	SA
...4	R172	2007-002899	R-CHIP;10ohm,1%,1/10W,TP,1608	1	SA
...4	R174	2007-002899	R-CHIP;10ohm,1%,1/10W,TP,1608	1	SA
...4	R431	2007-007004	R-CHIP;12Kohm,1%,1/10W,TP,1608	1	SA
...4	R207	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA201	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA204	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA205	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA209	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA210	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	RA211	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	U2	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	U3	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	U4	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	U5	2011-000881	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.	1	SA
...4	C208	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C209	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C210	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C212	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C213	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA

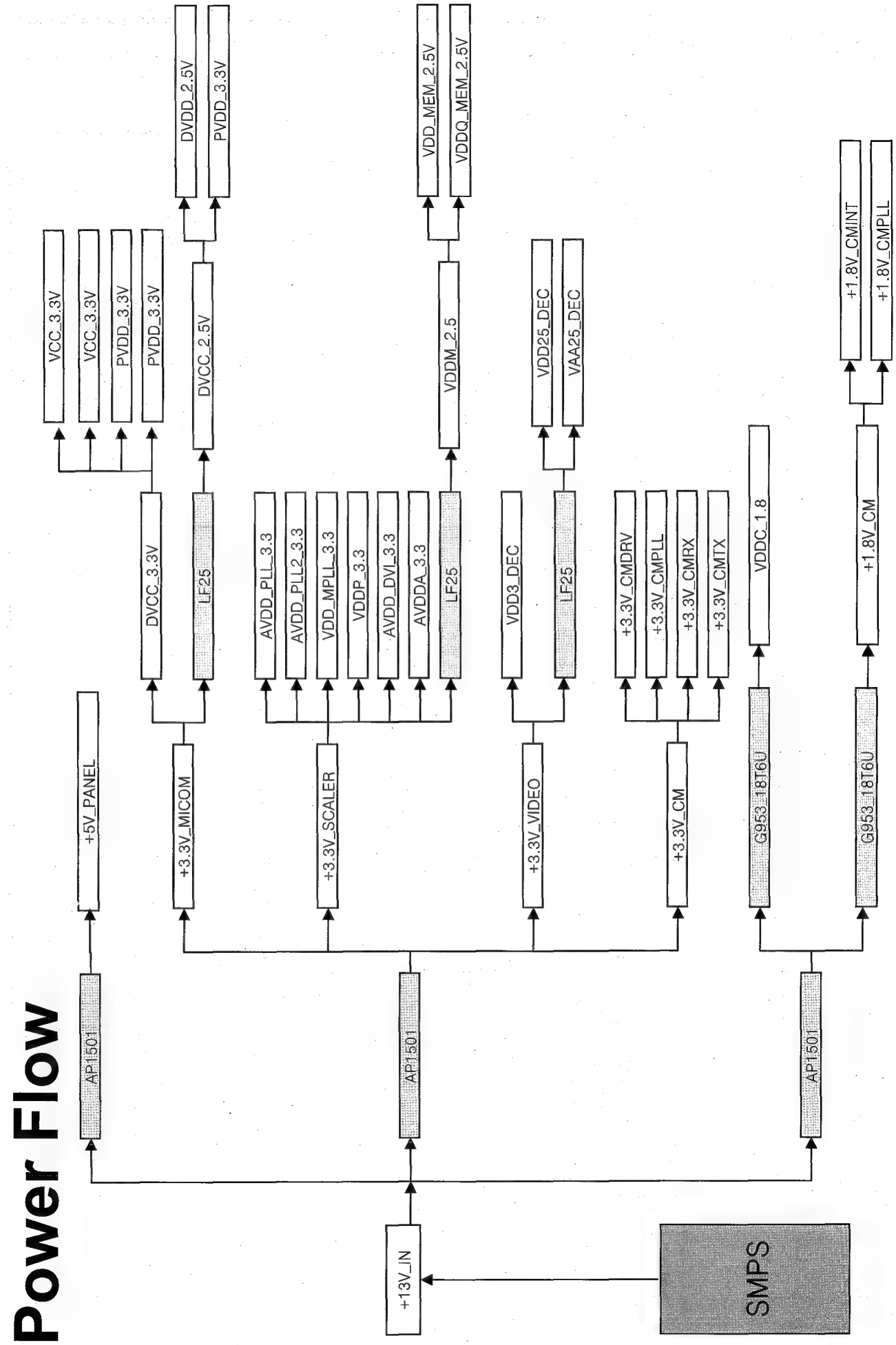
Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
...4	C214	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C215	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C216	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C220	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C221	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C222	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C223	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C224	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C226	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C227	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C229	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C230	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C231	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C307	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C319	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C321	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C323	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C324	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C326	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C327	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C328	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C330	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C331	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C332	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C334	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C335	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C339	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C340	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C341	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C342	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C343	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C344	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C345	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C346	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C348	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C351	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C352	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C353	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C354	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C355	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C356	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C360	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C417	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C424	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C433	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C438	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C502	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C503	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C802	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C803	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608	1	SA
...4	C109	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA
...4	C439	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA
...4	C201	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C202	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C203	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C204	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C205	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C206	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C207	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C232	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C233	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C234	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C235	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C236	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C416	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C431	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C432	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C435	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C800	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C801	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA
...4	C302	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608	1	SA
...4	C303	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608	1	SA
...4	C111	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608	1	SA
...4	C217	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA
...4	C218	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA
...4	C113	2203-000815	C-CER,CHIP;0.033nF,5%,50V,C0G,1608	1	SA
...4	C101	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C105	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C106	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C107	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C108	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C110	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C430	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA
...4	C120	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C121	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA

Level	Loc. No.	Code No.	Description & Specification	Q'ty	SA/SNA
...4	C122	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C123	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C124	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C125	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C126	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C127	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C128	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C129	2203-005015	C-CER,CHIP;150nF,+80-20%,16V,Y5V,1608	1	SA
...4	C421	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C422	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C504	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C505	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C621	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C622	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA
...4	C114	2203-005194	C-CER,CHIP;0.22nF,10%,50V,X7R,1608	1	SA
...4	C301	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C318	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C320	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C322	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C325	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C329	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C333	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C338	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C350	2203-005437	C-CER,CHIP;10000nF,+80-20%,10V,Y5V,3216	1	SA
...4	C418	2402-001081	C-AL,SMD;100uF,20%,25V,WT,TP,8.3x8.3x10	1	SA
...4	C434	2402-001081	C-AL,SMD;100uF,20%,25V,WT,TP,8.3x8.3x10	1	SA
...4	C501	2402-001081	C-AL,SMD;100uF,20%,25V,WT,TP,8.3x8.3x10	1	SA
...4	C336	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C337	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C347	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C349	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C419	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C423	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C437	2402-001128	C-AL,SMD;100UF,20%,16V,WT,TP,6.3X5.7MM	1	SA
...4	C228	2409-001049	C-ORGANIC;47UF,20%,6.3V,FX,TP,5X5.9MM,-	1	SA
...4	C250	2409-001049	C-ORGANIC;47UF,20%,6.3V,FX,TP,5X5.9MM,-	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	T0052	2703-001778	INDUCTOR-SMD;3.3uH,20%,3225	1	SA
...4	X201	2801-003667	CRYSTAL-SMD;14.31818MHz,30ppm,28-AAN,16,	1	SA
...4	X200	2801-003773	CRYSTAL-SMD;12MHZ,30PPM,28-AAN,20PF,50OH	1	SA
...4	T0568	3301-001145	BEAD-SMD;60OHM,4516,6000,TP,70OHM/45MHZ,	1	SNA
...4	T0568	3301-001793	BEAD-SMD;18ohm,1608,-,TP,11.8ohm/37.6MHz	1	SA
...4	T0568	3301-001793	BEAD-SMD;18ohm,1608,-,TP,11.8ohm/37.6MHz	1	SA
...4	T0568	3301-001793	BEAD-SMD;18ohm,1608,-,TP,11.8ohm/37.6MHz	1	SA
...4	CN201	3711-005470	HEADER-BOARD TO CABLE;BOX,30P,1R,1.25mm,	1	SA
...4	CN502	3711-005543	HEADER-BOARD TO CABLE;BOX,6P,1R,1.25mm,S	1	SA
...4	L401	BN27-00002A	COIL-CHOKE(SMD);47uH,47uH,20%,12*12*8mm,	1	SA
...4	T0010	BN27-00009A	COIL CHOKE;SMD 12X12X6,EOS,33UH,15%,-,0.	1	SA
...4	S301	BN32-00005A	SENSOR SW-TILT;SPSF100100,DC5V,1mA,-10 ~	1	SA
...4	MICOM	BN97-00700C	ASSY MICOM-STZ,W/W;BR20DS*,W/W	1	SA
....5	IC520	0903-001402	IC-MICROCONTROLLER;NT68F632ALG,8Bit,PLCC	1	SNA
...4	T0077	BN41-00620E	PCB MAIN;204B,FR-4,4L,MP1.0,1.6T,156.5*8	1	SNA
1	M0113	BN92-01543Y	ASSY P/MATERIAL;LS20BRDTS/EDC	1	SNA
2	T0376	6902-000061	BAG AIR;LDPE,T0.2,L1000,W500,TRP,,,	0.007	SNA
2	T0376	6902-000379	BAG AIR;LDPE,T0.2,W1000,L1800,TRP,-,--	0.002	SNA
2	P/M	6902-000604	BAG WRAPPING;LDPE,T0.02,W500,L10000,TRP,	1.93	SNA
2	M0081	6902-000609	BAG ROLL;LDPE,T0.05,W2400,L1000,TRP,-,-	0.055	SNA
2	T0524	6902-000520	BAG PE;HDPE/NITRON(DOUBLE),T0.015/T0.5(D	1	SNA
1	M0019	BN92-01604A	ASSY LABEL;BR20CS*/ADC	1	SNA
1	M0003	BN92-01616J	ASSY BOX;LS20BRDTS/XAA	1	SNA
2	T0129	BH75-10529C	UNIT-HANDLE/PACKING;S/M170MP,PE-LD,PE-HD	1	SA
..3	M0103	BN72-60001A	LEVER-TOP;LSD210TL,PE-LD,WHITE,TFT_LCD	1	SNA
..3	M0102	BN72-60002C	LEVER-BOTTOM;S/M170MP,PE-HD,BLUE	1	SNA
2	BOX	BN69-01221A	BOX-MONITOR;LS204BRD,SY-01,YEL,A-1,L539*	1.02	SNA
1	M0045	BN92-01617S	ASSY ACCESSORY;LS20BRDTS/XAA	1	SNA
2	M0114	BN39-00244B	CBF SIGNAL;MO15PS,15P/15P,20276-N,1830MM	1	SA
2	M0045	BN96-02846K	ASSY ACCESSORY;LS20BRDTS/XAA	1	SNA
..3	T0268	3903-000085	CBF-POWER CORD;DT,US,BP3/YES,I(IEC C13/C	1	SA
..3	T0524	6902-000110	BAG PE;LDPE,T0.05,W250,L400,TRP,28,2	1	SNA
..3	MP1.0	AA68-40065B	CARD-01,REGISTRATION;,SEA,A5,ENG,A/P220,	1	SNA
..3	ACCESSORY	BH68-00261F	CARD WARRANTY-03;SyncMaster14-1,ADC,MOJO	1	SNA
..3	ACCESSORY	BH68-00344C	CARD WARRANTY-01;SECA W'TY & CRM CARD,SE	1	SNA
..3	ACCESSORY	BN68-00832C	MANUAL-REGISTRATION CARD;SECA all,SAMSUN	1	SNA
..3	ACCESSORY	BN68-00832D	MANUAL-REGISTRATION CARD;SECA all,SAMSUN	1	SNA
..3	M0215	BN96-02318H	ASSY MANUAL P-IB+QSG;LS20BRD,204B,SyncMa	1	SNA
...4	M0808	BH68-00376L	MANUAL-04;LCDQUICK SETUP GUIDE,SYNCMASTE	1	SNA
...4	IB	BN59-00480H	S/W DRIVER-00,IB;LS20BRD,204B,W/W,SyncMa	1	SNA

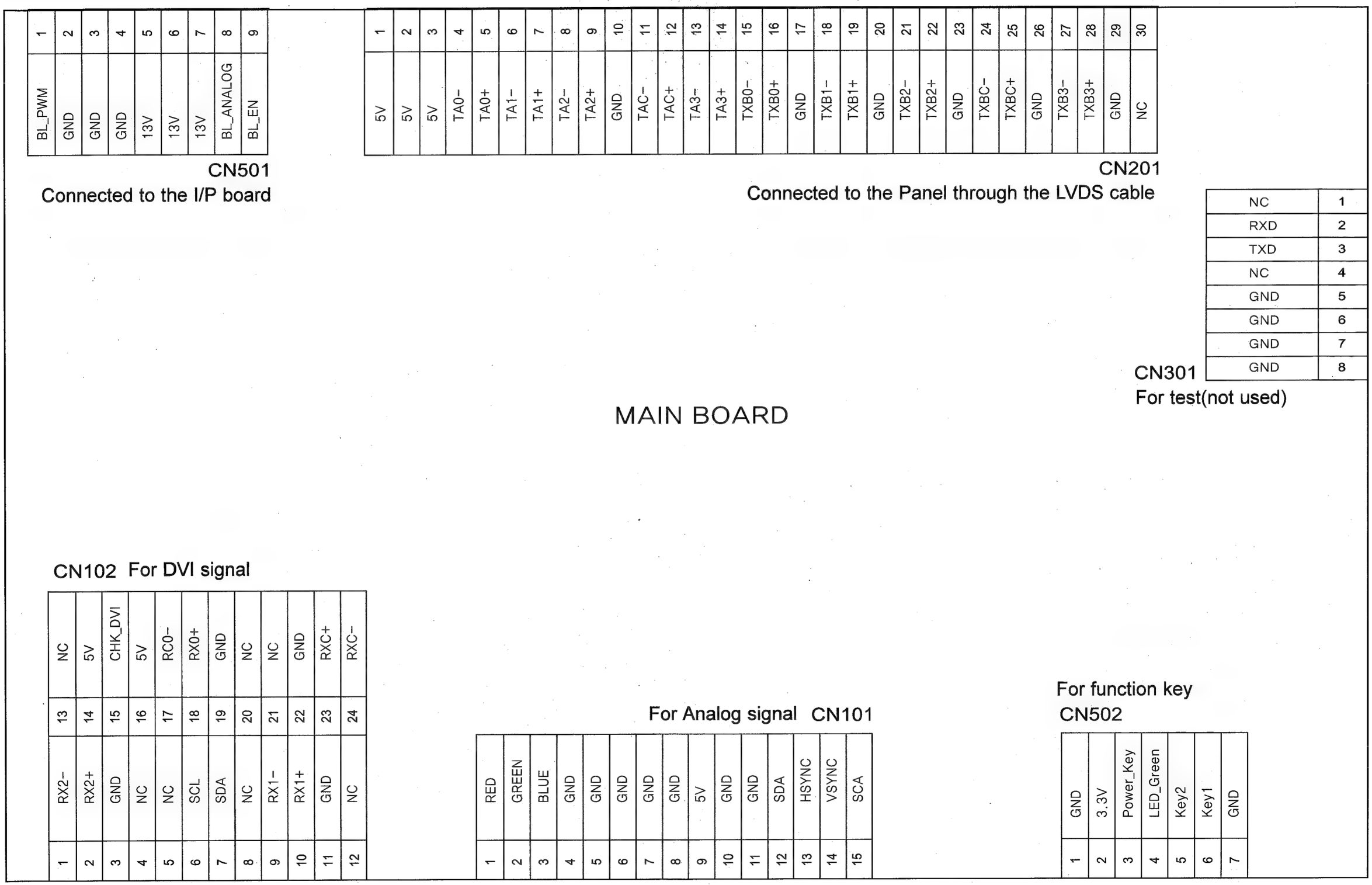
Memo

7 Block Diagram




Power Flow
SMPS
+13V_IN
AP1501
AP1501
AP1501
+5V_PANEL
+3.3V_MICOM
+3.3V_SCALER
+3.3V_VIDEO
+3.3V_CM
G953_18T6U
G953_18T6U
VCC_3.3V
VCC_3.3V
PVDD_3.3V
PVDD_3.3V
DVCC_3.3V
LF25
DVCC_2.5V
DVDD_2.5V
PVDD_3.3V
AVDD_PLL_3.3
AVDD_PLL2_3.3
VDD_MPLL_3.3
VDDP_3.3
AVDD_DVI_3.3
AVDDA_3.3
LF25
VDDM_2.5
VDD_MEM_2.5V
VDDQ_MEM_2.5V
VDD3_DEC
LF25
VDD25_DEC
VAA25_DEC
+3.3V_CMDRV
+3.3V_CMPLL
+3.3V_CMRX
+3.3V_CMTX
VDDC_1.8
+1.8V_CM
+1.8V_CMINT
+1.8V_CMPLL

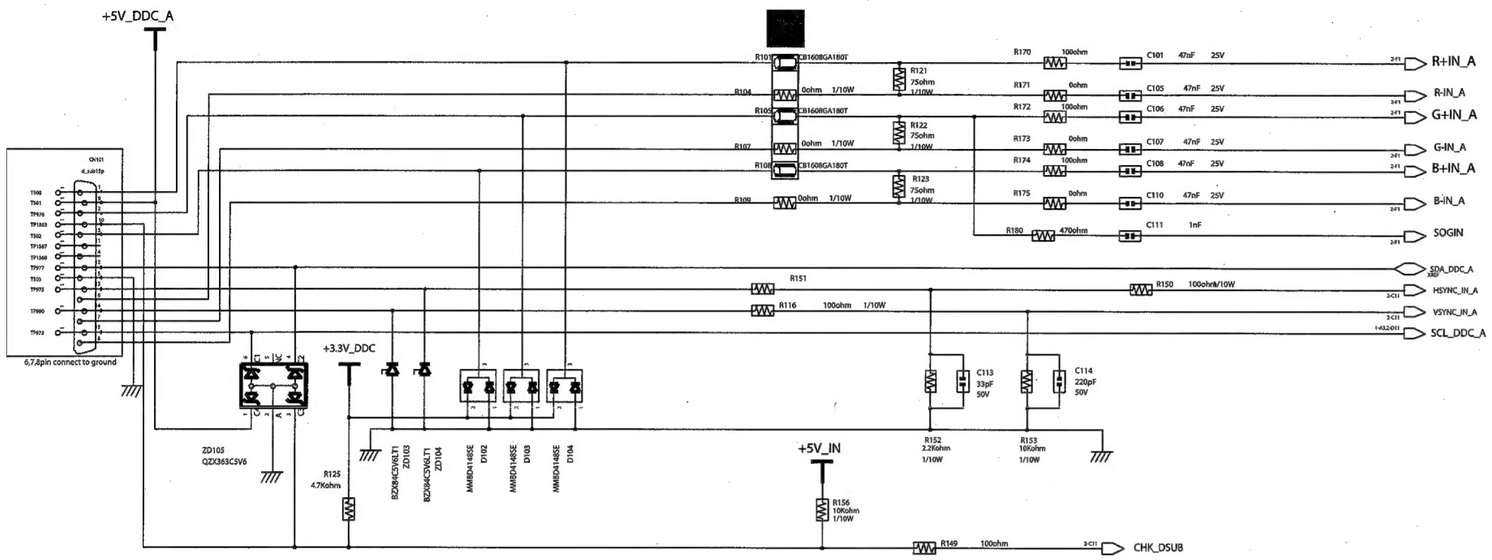
8 Wiring Diagram

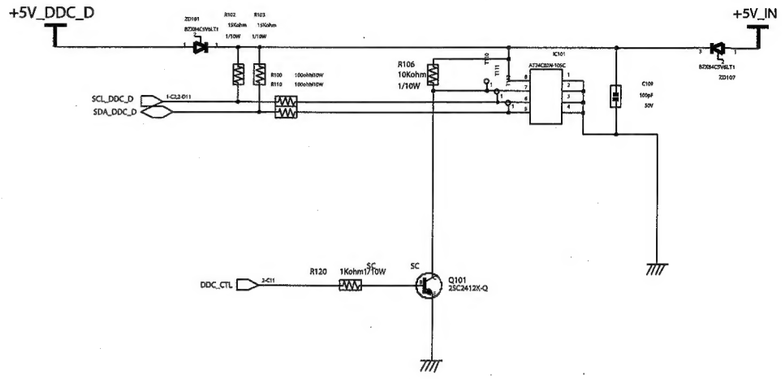


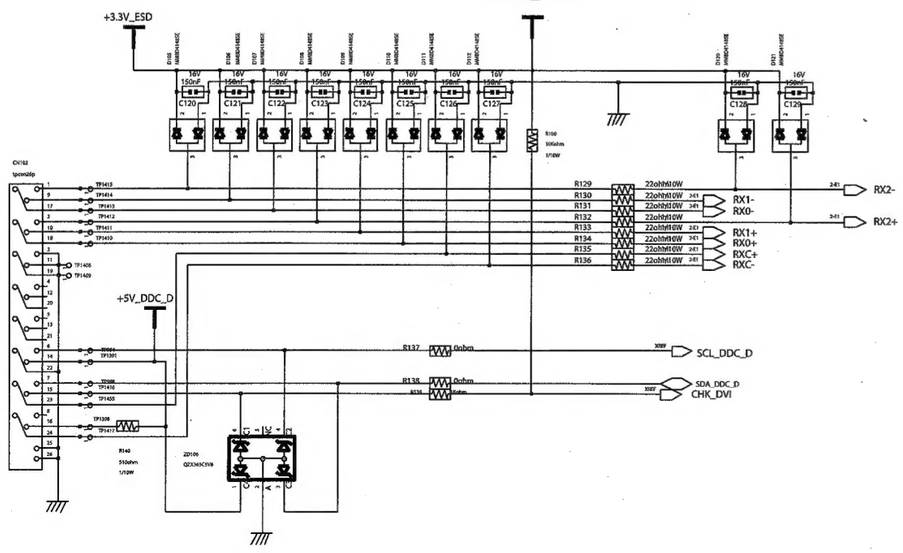
9 Schematic Diagrams

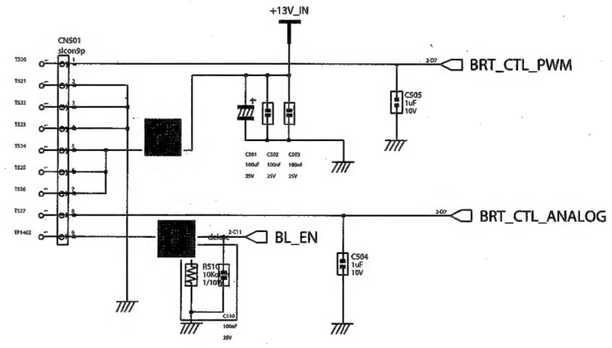
- This Document can not be used without Samsung's authorization.

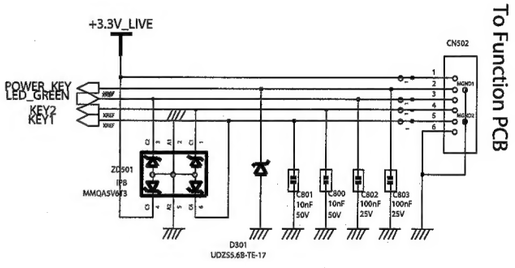
9-1 Schematic Diagrams



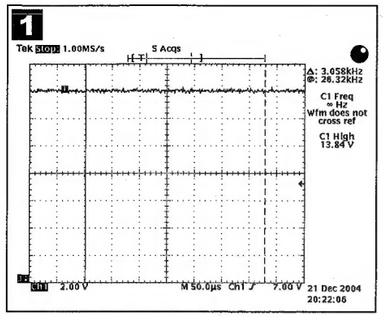


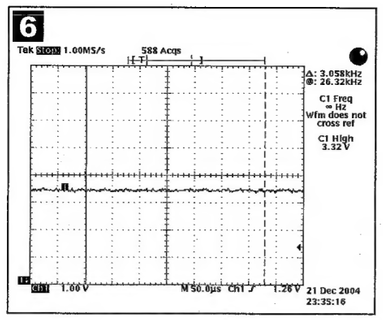


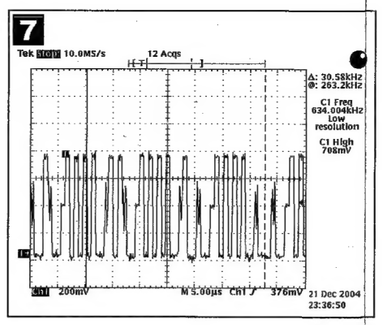




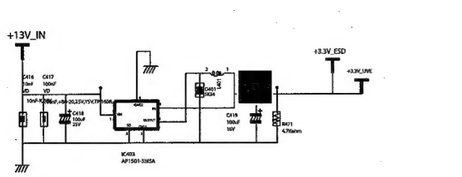
To Function PCB

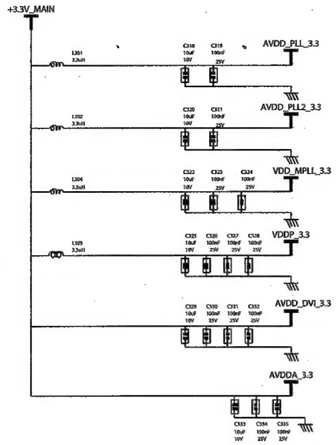

1
Tek STOP 1.00MS/s
5 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
= Hz
Wfm does not cross ref
C1 High
13.84 V
Ch1 2.00 V
M 50.0µs Ch1 ƒ 7.00 V
21 Dec 2004
20:22:06

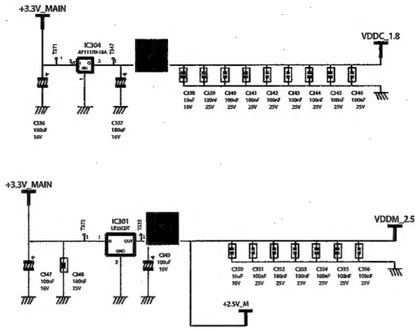

6
Tek STOP 1.00MS/s
588 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
= Hz
Wfm does not cross ref
C1 High
3.32 V
Ch1 1.00 V
M 50.0µs Ch1 ƒ 1.28 V
21 Dec 2004
23:35:16

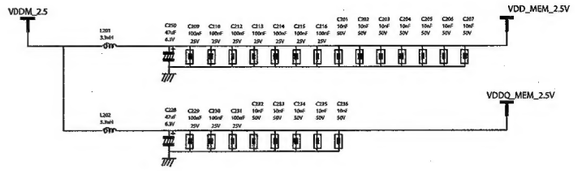

7
Tek Stop 10.0MS/s
12 Acqs
Δ: 30.58kHz
@: 263.2kHz
C1 Freq
634.004kHz
Low resolution
C1 High
708mV
Ch1 200mV
M 5.00µs Ch1 ƒ 376mV
21 Dec 2004
23:36:50

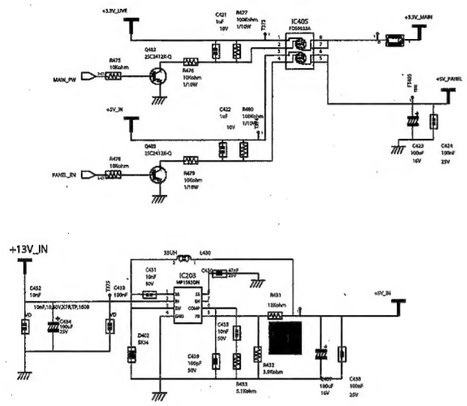
9-2 Schematic Diagrams

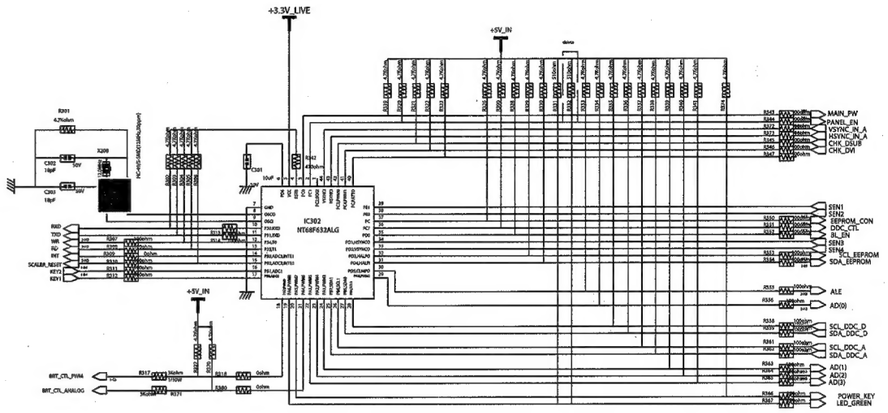


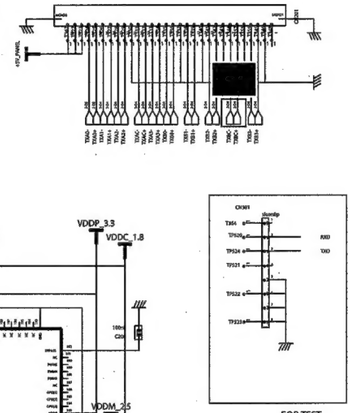


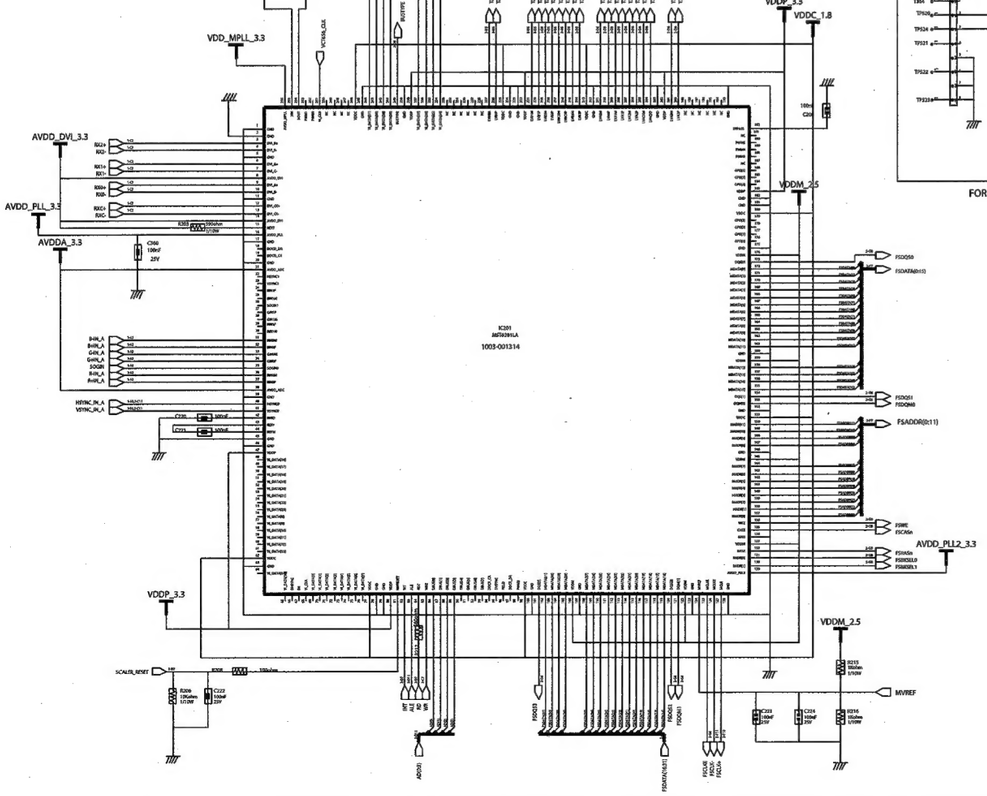


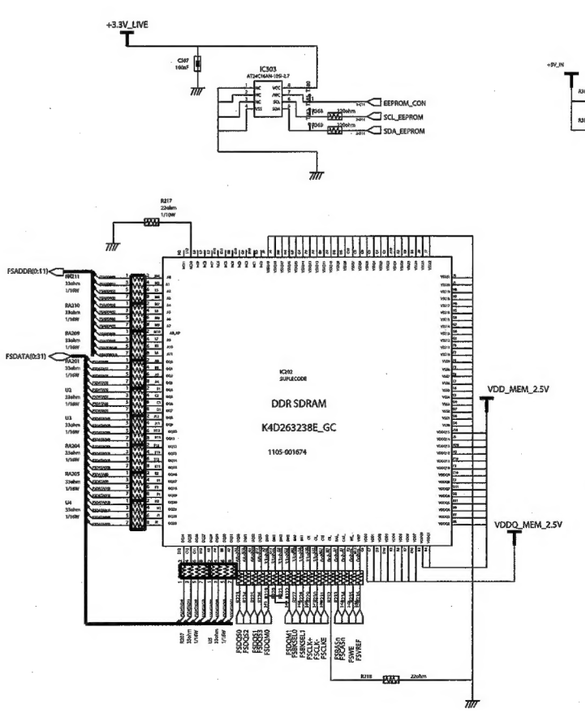


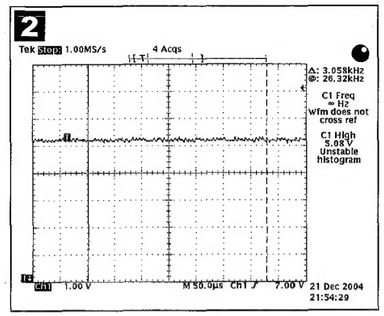


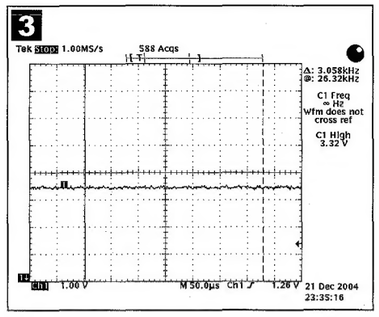


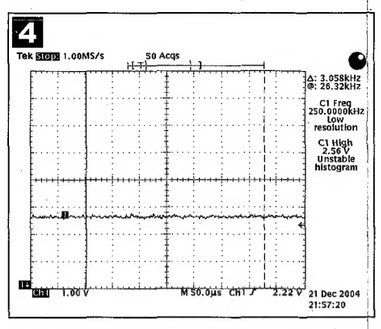


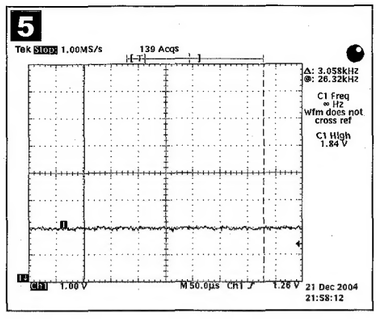


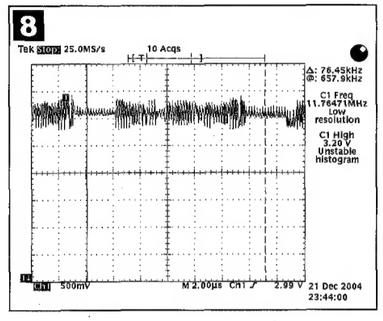


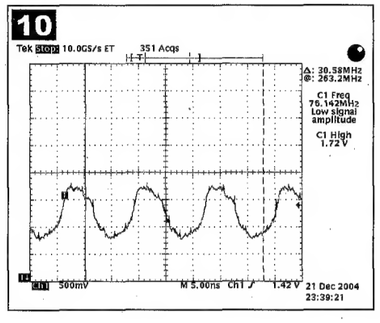

2
Tek Stop: 1.00MS/s
4 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
∞ Hz
Wfm does not cross ref
C1 High
5.08 V
Unstable histogram
C1 1.00 V
M 50.0µs Ch1 ƒ 7.00 V
21 Dec 2004
21:54:29


3
Tek Stop: 1.00MS/s
588 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
∞ Hz
Wfm does not cross ref
C1 High
3.32 V
C1 1.00 V
M 50.0µs Ch1 ƒ 1.26 V
21 Dec 2004
23:35:16


4
Tek Stop: 1.00MS/s
50 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
250.0000kHz
Low resolution
C1 High
2.56 V
Unstable histogram
C1 1.00 V
M 50.0µs Ch1 ƒ 2.22 V
21 Dec 2004
21:57:20


5
Tek Stop: 1.00MS/s
139 Acqs
Δ: 3.058kHz
@: 26.32kHz
C1 Freq
∞ Hz
Wfm does not cross ref
C1 High
1.84 V
C1 1.00 V
M 50.0µs Ch1 ƒ 1.26 V
21 Dec 2004
21:58:12


8
Tek Stop: 25.0MS/s
16 Acqs
Δ: 76.45kHz
@: 657.9kHz
C1 Freq
11.76471MHz
Low resolution
C1 High
3.20 V
Unstable histogram
C1 500mV
M 2.00µs Ch1 ƒ 2.99 V
21 Dec 2004
23:44:00


10
Tek Stop: 10.0GS/s ET
351 Acqs
Δ: 20.58MHz
@: 263.2MHz
C1 Freq
76.142MHz
Low signal amplitude
C1 High
1.72 V
C1 500mV
M 5.00ns Ch1 ƒ 1.42 V
21 Dec 2004
23:39:21